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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/430,697	10/29/1999	AJAY DHOLAKIA	RAL9-99-0062	7637

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IBM CORPORATION  
PO BOX 12195  
DEPT 9CCA, BLDG 002  
RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

ODOM, CURTIS B

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 09/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/430,697

Applicant(s)

DHOLAKIA ET AL.

Examiner

Curtis B. Odom

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 29 October 1999.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4-11, 15-22, 26-33, and 37-41 is/are allowed.
- 6) ☒ Claim(s) 1-3, 12-14, 23-25 and 34-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 1999 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Specification***

1. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or  
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

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2. The disclosure is objected to because of the following informalities: The specification does not include a brief description of the drawings.

Appropriate correction is required.

***Claim Rejections - 35 USC § 101***

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 34-36 are rejected under 35 U.S.C. 101 because claims 34-36 are directed to the characteristics of the signal. Note this signal merely consists of “1” and “0” to represent the coded signal. It does not fall into the category of a method, apparatus, product, or composition of matter. Therefore, the claims are rejected under 35 U.S.C 101 for being directed toward non-statutory subject matter.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-3, 12-14, and 34-36 are rejected under 35 U.S.C. 102(e) as being anticipated by Olafsson (U.S. Patent No. 6, 332, 009).

Regarding claim 1, Olafsson discloses a system (Fig. 4, block 202) for generating a sign pattern for a digital impairment learning (DIL) signal, comprising:

means (Fig. 4, block 402) for selecting a sign pattern length comprising a positive integer that is wholly divisible by four and is not wholly divisible by three (column 16, lines 58-64), the sign pattern comprising an even subsequence and an odd subsequence (column 14, lines 39-43), each subsequence comprising zeros and ones corresponding to negative and positive signs (Fig. 4, block 420 and column 4, lines 35-42), respectively;

means (Fig. 4 , block 402) for balancing a number of zeros in the even subsequence with a number of ones in the even subsequence (column 15, lines 10-16), wherein in order for the sign pattern to have an approximately equal number of positive and negative occurrences, the number of zeros and the number of ones must be balanced in the subsequence; and

means (Fig. 4 , block 402) for balancing a number of zeros in the odd subsequence with a number of ones in the odd subsequence (column 15, lines 10-16), wherein in order for the sign pattern to have an approximately equal number of positive and negative occurrences, the number of zeros and the number of ones must be balanced in the subsequence

Regarding claim 2, Olafsson discloses a system as recited in claim 1, wherein the DIL signal comprises at least on DIL segment having a DIL segment length (column 14, line 58) and wherein the means (Fig. 4, block 402) for selecting the sign pattern length comprises:

means (Fig. 4, block 402) for selecting a sign pattern length (column 14, line 58) comprising a positive integer (column 14, lines 39-41) that is wholly divisible by four, that is not wholly divisible by three and that wholly divides the DIL segment (column 16, lines 58-63), wherein the sign pattern length can be fixed to any suitable number.

Regarding claim 3, Olafsson discloses a system (Fig. 4, block 202) as recited in claim 2, wherein the DIL segment length divided by six is a power of two (column 16, lines 58-63), wherein the segment length can be fixed to any suitable number, including 24, which when divided by six is a power of two.

Regarding claim 12, Olafsson discloses a method of generating a sign pattern for a digital impairment learning (DIL) signal, comprising the steps of:

selecting (Fig. 4, block 402) a sign pattern length comprising a positive integer that is wholly divisible by four and is not wholly divisible by three (column 16, lines 58-64), the sign pattern comprising an even subsequence and an odd subsequence (column 14, lines 39-43), each subsequence comprising zeros and ones corresponding to negative and positive signs (Fig. 4, block 420 and column 4, lines 35-42), respectively;

balancing (Fig. 4, block 402) a number of zeros in the even subsequence with a number of ones in the even subsequence (column 15, lines 10-16), wherein in order for the sign pattern to have an approximately equal number of positive and negative occurrences, the number of zeros and the number of ones must be balanced in the subsequence; and

balancing (Fig. 4, block 402) a number of zeros in the odd subsequence with a number of ones in the odd subsequence (column 15, lines 10-16), wherein in order for the sign pattern to have an approximately equal number of positive and negative occurrences, the number of zeros and the number of ones must be balanced in the subsequence

Regarding claim 13, Olafsson discloses a method as recited in claim 12, wherein the DIL signal comprises at least one DIL segment having a DIL segment length (column 14, line 58) and wherein the step (Fig. 4, block 402) of selecting the sign pattern length comprises the step of:

selecting (Fig. 4, block 402) a sign pattern length (column 14, line 58) comprising a positive integer (column 14, lines 39-41) that is wholly divisible by four, that is not wholly divisible by three and that wholly divides the DIL segment (column 16, lines 58-63), wherein the sign pattern length can be fixed to any suitable number.

Regarding claim 14, Olafsson discloses a method as recited in claim 13, wherein the DIL segment length divided by six is a power of two (column 16, lines 58-63), wherein the segment length can be fixed to any suitable number, including 24, which when divided by six is a power of two.

Regarding claim 34, Olafsson discloses a digital impairment learning signal (DIL) (column 12, line 26-28 and Fig. 5, block 500) comprising:

a sequence of symbols (Fig. 5, block 502 and column 14, lines 36-39); and

the sequence of symbols (Fig. 5, block 502 and column 14, lines 36-39) having a sign pattern length comprising a positive integer that is wholly divisible by four and is not wholly divisible by three (column 16, lines 58-64), the sign pattern comprising an even subsequence and an odd subsequence (column 14, lines 39-43), each subsequence comprising zeros and ones

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corresponding to negative and positive signs (Fig. 4, block 420 and column 4, lines 35-42), respectively.

Regarding claim 35, Olafsson discloses a DIL signal as recited in claim 34, wherein the DIL signal comprises at least one DIL segment having a DIL segment length (column 14, line 58) and wherein the sign pattern length (column 14, line 58) comprises a positive integer (column 14, lines 39-41) that is wholly divisible by four, that is not wholly divisible by three and that wholly divides the DIL segment (column 16, lines 58-63), wherein the sign pattern length can be fixed to any suitable number.

Regarding claim 36, Olafsson discloses a DIL signal as recited in claim 35, wherein the DIL segment length divided by six is a power of two (column 16, lines 58-63), wherein the segment length can be fixed to any suitable number, including 24, which when divided by six is a power of two.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 23-25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Olafsson (U.S. Patent No. 6, 332, 009) in view of Langberg et al. (U.S. Patent No. 5, 852, 630).



Olafsson discloses all of the subject matter as described in the previous rejection (see rejection of claims 1-3 and 12-14) except for the method and system written as a computer program product with a computer readable storage medium.

However, Langberg et al. teaches that the method and apparatus for a transceiver warm start activation procedure with precoding can be implemented in software stored in a computer-readable medium. The computer readable medium is an electronic, magnetic, optical, or other physical device or means that can contain or store a computer program for use by or in connection with a computer-related system or method (note column 3, lines 51-65). One skilled in the art at the time the invention was made would have clearly recognized that the method of Olafsson would have been implemented into software. The implemented software would perform the same function of the hardware for less expense, greater adaptability, and greater flexibility. Therefore, it would have been obvious to have used the software in Olafsson as taught by Langberg et al. in order to reduce cost and improve the adaptability and flexibility of the communication system.

#### ***Allowable Subject Matter***

9. Claims 4-11, 15-22, 26-33, and 37-41 are allowable over prior art because related references do not disclose method and system for generating DIL signals involving separating symbol groups by a maximum group spacing difference, and generating a sequence of ucodes, each ucode in the sequence being selected from the plurality of ucodes in accordance with the

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uchord sequence and from within each of the plurality of uchords in accordance with the ucode offset sequence.

### *Conclusion*

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Krishnan et al. (U.S. Patent No. 6, 301, 296) discloses a digital impairment learning sequence.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 703-305-4097. The examiner can normally be reached on Monday- Friday, 8-5.

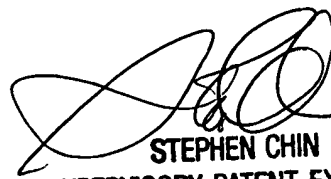
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-3054-714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-6743 for regular communications and 703-308-6743 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Curtis Odom  
September 16, 2002

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STEPHEN CHIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600